UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte EDMUND W. BROWN

Appeal 2007-2733
Application 09/769,590
Technology Center 3600

Decided: December 10, 2007

Before HUBERT C. LORIN, JENNIFER D. BAHR, and LINDA E. HORNER, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Edmund W. Brown (Appellant) seeks our review under 35 U.S.C. § 134 of the final rejection of claims 22-30, 32, 34, 35, and 37-40, which are all of the claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

SUMMARY OF DECISION

We AFFIRM.

THE INVENTION

The Appellant's claimed invention is to a dampening cylinder for a transfer mechanism for transferring a load between an upper conveyor and a lower conveyor (Spec. 1:5-6). Claim 22, reproduced below, is representative of the subject matter on appeal.

> 22. A dampening cylinder, comprising:
>
> a cylindrical housing having first and second ends and an inner surface defining a cavity in the housing for receiving a fluid therein;
>
> a piston slidably extending through the cavity in the housing;
>
> a flange projecting from the piston and positioned within the cavity so as to divide the cavity in the housing into first and second portions, the flange terminating at a radially outer edge which forms a slidable interface with the inner surface of the housing; and
>
> a flow conduit having a first end communicating with the first portion of the cavity in the housing and a second end communicating with the second portion of the cavity in the housing, the flow conduit including:
>
> first and second flow control valves for controlling the flow of fluid through the flow conduit between the first and second portions of the cavity in the housing, each flow control valve including a flow regulator having a plurality of user selectable discrete settings for controlling the

> flow rate of the fluid flowing between the first and second portions of the cavity and for providing a discrete metered fluid flow through a corresponding flow control valve;
>
> wherein the fluid flowing between the first and second portions of the housing flows through the flow conduit and wherein the first flow control valve controls the flow rate of the fluid into the second portion and the second flow control valve controls the flow rate of the fluid into the first portion.

THE REJECTION

The Examiner relies upon the following as evidence of unpatentability:

Kroeker	US 4,969,643	Nov. 13, 1990
Kozhevnikov	GB 1 275 827	May 24, 1972

The following rejection is before us for review:

1. Claims 22-30, 32, 34, 35, and 37-40 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Kozhevnikov and Kroeker.

ISSUE

The Appellant contends that the Examiner erred in rejecting claims 22-30, 32, 34, 35, and 37-40 because "neither of the cited references shows or suggests a dampening cylinder wherein flow regulators control the rate of fluid flowing between the first adjacent and second portions of the cavity in the housing" and because there is no motivation to modify the valves of Kozhevnikov (App. Br. 14-20; Reply Br. 5). The Examiner determined that it would have been obvious to

replace the valves of Kozhevnikov with the user-selectable, discrete control valves of Kroeker to achieve a finer level of control over the valves (*Id.*).

The Appellant further contends that the Examiner erred in rejecting claims 30, 32, 34, 35, and 37-39 because "nothing in the cited references shows or suggests a dampening cylinder wherein the fluid flowing into and out of the first portion of the housing flows solely through the first opening and the fluid flowing into and out of the second portion of the housing flows solely through the second opening in the housing" (App. Br. 18-19). The Examiner found that Kozhevnikov's check valve 38 and valve 35 operate as the claimed first and second flow control valves (Answer 4).

The issue before us is whether the Appellant has shown that the Examiner erred in rejecting claims 22-30, 32, 34, 35, and 37-40 under 35 U.S.C. § 103(a) as unpatentable over Kozhevnikov and Kroeker.

FINDINGS OF FACT

We find that the following enumerated findings are supported by at least a preponderance of the evidence. *Ethicon, Inc. v. Quigg*, 849 F.2d 1422, 1427 (Fed. Cir. 1988) (explaining the general evidentiary standard for proceedings before the Office).

1. Kozhevnikov relates to an apparatus to balance out forces of inertia in reciprocating masses (Kozhevnikov 1:11-13).
2. Kozhevnikov discloses a balancing device with two maximum pressure valves 35, where each maximum pressure valve 35 includes a housing

47, a disc valve 48, a piston 49, a spring 50, a spring washer 51, and an adjustment screw 52 (Kozhevnikov 3:30-31 and 47-50; Fig. 2).

3. Each of the maximum pressure valves 35 is connected with the respective working spaces of air cylinder 1 (Kozhevnikov 4:25-29).
4. The working pressure spaces C of the maximum pressure valves 35 are permanently connected with each other through main 36 and each of the high pressure spaces D of these valves is connected with main 36 through pipings 37, which include non-return valves 38 (Kozhevnikov 3:30-36 and 4:29-35, Fig. 2).
5. As such, Kozhevnikov discloses a flow conduit formed by pipings 36 and 37, the flow conduit having a first end (left end) communicating with a first portion of the cavity in the housing (the working space on the left side of air cylinder 1) and a second end (right end) communicating with the second portion of the cavity in the housing (the working space on the right side of air cylinder 1).
6. The spring 50 of maximum pressure valve 35 biases the disc valve 48 in a closed position, such that adjustment of the adjustment screw 52 adjusts the force needed to press against disc valve 48 to open maximum pressure valve 35 (Kozhevnikov, Fig. 2).
7. At a predetermined point during movement of piston 2 in air cylinder 1, the left maximum pressure valve 35 opens. The point is determined based on the setting of the adjustment screw 52. When the left valve 35 opens, the excess air from the left working space of air cylinder 1 passes

by disc valve 48 and is forced through the piping of main 36, to the piping 37 on the right side, and then via the non-return valve 38 on the right side, to the right working space of air cylinder 1. Thus, air pressure in the left working space of air cylinder 1 does not exceed a definite preset value. (Kozhevnikov 4:54-61; Fig. 2).

8. As such, Kozhevnikov discloses that the flow conduit includes first and second flow control valves (maximum pressure valves 35) for controlling the flow of fluid through the flow conduit between the first and second portions of the cavity in the housing (between the left and right working spaces of the air cylinder 1), wherein the fluid flowing between the first and second portions of the housing flows through the flow conduit and wherein the first flow control valve (the maximum pressure valve 35 on the left side) controls the flow of the fluid into the second portion (the working space on the right side of air cylinder 1) and the second flow control valve (the maximum pressure valve 35 on the right side) controls the flow of the fluid into the first portion (the working space on the left side of air cylinder 1).

9. The purpose of the maximum pressure valves 35 of Kozhevnikov is to maintain a steady rolling process when the main 33 of bypass valve 34 is shut off (Kozhevnikov 4:36-65).

10. The springs 50 of each maximum pressure valve 35 are set to maintain equality between the air pressure in the working spaces of the air cylinder 1 for a given steady rolling process (Kozhevnikov 4:36-53). Once

movement of piston 2 disturbs the equality of the air pressure on the left and right working spaces of air cylinder 1, the appropriate maximum pressure valve 35 opens to restore equality of the air pressure (Kozhevnikov 4:54-59).

11. Once the valve 35 opens, the air is allowed to flow from one working space to the other with no care taken as to the rate of flow through the flow conduit.

12. It would be preferable, however, to be able to control this rate of flow through the flow conduit, so that the rate at which equality of the air pressure is restored can be controlled to match the specific steady rolling process.

13. The maximum pressure valves 35 of Kozhevnikov operate when the main 33 is shut off (Kozhevnikov 4:49-59). The main 33 is shut off once stand 7 has been accelerated and the forces of inertia have reached a definite permanent value characteristic for the steady mill operation (Kozhevnikov 3:91-98). As such, while the main 33 is shut off, the maximum pressure valves 35 and check valves 38 operate to allow the fluid flowing into and out of the first portion of the housing to flow solely through the first opening and the fluid flowing into and out of the second portion of the housing to flow solely through the second opening in the housing.

14. Kroeker relates to an exercise apparatus having a resistance against exertion by the user (Kroeker, col. 1, ll. 4-6).

15. The resistance is provided by a hydraulic system which includes a cylinder 36 having a piston rod 38 and a piston 56 (Kroeker, col. 4, ll. 54-57; Fig. 4).
16. Cylinder 36 has openings 76 and 78 (Kroeker, col. 4, ll. 66-67).
17. A line 80 communicates with cylinder opening 76 and a T-junction member 96 through a check valve 84, which allows flow from the cylinder but not to the cylinder, and an adjustable flow control valve 88, adjustable by rotatable knob 92 (Kroeker, col. 4, l. 67 – col. 5, l. 3). Flow control valve 88 allows free flow towards the cylinder and controlled flow away from the cylinder toward T-junction member 96 (Kroeker, col. 5, ll. 3-6).
18. A line 82 communicates with cylinder opening 78 and T-junction member 96 through a check valve 86, which allows flow from the cylinder but not to the cylinder, and an adjustable flow control valve 90, adjustable by rotatable knob 94 (Kroeker, col. 5, ll. 6-10). Flow control valve 90 allows free flow towards the cylinder and controlled flow away from the cylinder toward T-junction member 96 (Kroeker, col. 5, ll. 10-13).
19. A line 98 connects T-junction member 96 to a reservoir 58, forming an inlet pressure line (Kroeker, col. 5, ll. 13-15).
20. As such, Kroeker teaches using flow control valves 88 and 90 to provide controlled flow from the working spaces of the cylinder 36 to the T-junction member 96, wherein the amount of controlled flow allowed

through flow control valves 88 and 90 is set by the user by rotating knobs 92 and 94, respectively. Thus, Kroeker teaches using flow control valves 88 and 90 having flow regulators 92 and 94, with a plurality of user selectable discrete settings, for controlling the flow rate of the fluid for providing a discrete metered fluid flow (i.e., controlled flow) through a corresponding flow control valve 88 and 90.

PRINCIPLES OF LAW

"Section 103 forbids issuance of a patent when 'the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.'" *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1734 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 127 S.Ct. at 1734 ("While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.")

ANALYSIS

The Appellant argues the references individually. While neither reference individually discloses all of the elements of claim 22, the combination of Kozhevnikov and Kroeker would have led one having ordinary skill in the art to the claimed dampening cylinder.

Kozhevnikov discloses a flow conduit formed by pipings 36 and 37 having a first end (left end) communicating with a first portion of the cavity in the housing (the working space on the left side of air cylinder 1) and a second end (right end) communicating with the second portion of the cavity in the housing (the working space on the right side of air cylinder 1) (FF 1-4). Kozhevnikov further discloses that the flow conduit includes first and second flow control valves (maximum pressure valves 35) for controlling the flow of fluid through the flow conduit between the first and second portions of the cavity in the housing (between the left and right working spaces of the air cylinder 1), wherein the fluid flowing between the first and second portions of the housing flows through the flow conduit and wherein the first flow control valve (the maximum pressure valve 35 on the left side) controls the flow of the fluid into the second portion (the working space on the right side of air cylinder 1) and the second flow control valve (the maximum pressure valve 35 on the right side) controls the flow of the fluid into the first portion (the working space on the left side of air cylinder 1) (FF 5-8).

The Appellant argues that the valves 35 and 38, once opened, allow air to pass, under pressure, without regard to or means for controlling the rate of the air flow (App. Br. 15; Reply Br. 3). Even if that is the case, the Examiner relied on

Kroeker, not Kozhevnikov, for teaching of flow control valves that control the rate of the air flow through the valves. As such, the Appellant's argument is unpersuasive because it is directed to each reference individually, whereas the Examiner's rejection relied on the combined teachings of the two references. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *See In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The Examiner relied on Kroeker to teach using flow control valves having a flow regulator with a plurality of user selectable discrete settings for controlling the flow rate of the fluid flowing between the first and second portions of the cavity and for providing a discrete metered fluid flow through a corresponding flow control valve (Answer 3). We agree with the Examiner's findings as to the scope and content of Kroeker.

Kroeker teaches using flow control valves 88 and 90 to provide controlled flow from the working spaces of the cylinder 36 to the T-junction member 96, wherein the amount of controlled flow allowed through flow control valves 88 and 90 is set by the user by rotating knobs 92 and 94, respectively. Thus, Kroeker teaches using flow control valves 88 and 90 having flow regulators 92 and 94, with a plurality of user selectable discrete settings, for controlling the flow rate of the fluid for providing a discrete metered fluid flow (i.e., controlled flow) through a corresponding flow control valve 88 and 90 (FF 14-20).

The Appellants argue that "[t]he alleged discrete flow metering provided in the Kroeker et al., '643 patent controls the flow of the fluid exiting corresponding

portions of the interior of the hydraulic cylinder into a reservoir, while the flow of fluid into the portions of the cavity are controlled by suction" (App. Br. 16; Reply Br. 4). This argument is unpersuasive because it is again directed to the Kroeker reference individually rather than addressing the Examiner's combination of Kroeker with Kozhevnikov. The Examiner did not rely on Kroeker to teach that the flow control valves control flow between first and second portions of the cavity of the housing. Rather, the Examiner merely relied on Kroeker to teach that flow control valves having flow regulators are known in the dampening cylinder art and that it would have been obvious to have used such flow control valves in the device of Kozhevnikov to provide "a finer level of control than is possible with the design of the valves of [Kozhevnikov]" and thus to control flow through the flow conduit between the left and right side working spaces of Kozhevnikov's air cylinder 1 (Answer 3).

The Appellant further argues that there is no motivation to combine the prior art references because "[t]here is no need to control the flow rate of the air passing between the first and second portions of the cavity [of Kozhevnikov]" (Reply Br. 5). We disagree.

The purpose of the maximum pressure valves 35 of Kozhevnikov is to maintain a steady rolling process when the main 33 of bypass valve 34 is shut off (FF 9). The springs 50 of each maximum pressure valve 35 are set to maintain equality between the air pressures in the working spaces of the air cylinder 1 for a given steady rolling process (FF 10). Once movement of piston 2 disturbs the equality of the air pressures on the left and right working spaces of air cylinder 1,

the appropriate maximum pressure valve 35 opens to restore equality of the air pressure (FF 10). As asserted by the Appellant, once the valve 35 opens, the air is allowed to flow from one working space to the other with no care taken as to the rate of flow through the flow conduit (FF 11). It would be preferable, however, to be able to control this rate of flow through the flow conduit using the flow control valves of Kroeker, so that the rate at which equality of the air pressure is restored can be controlled to match the specific steady rolling process (FF 12). As such, it would have been obvious to one having ordinary skill in the art to replace the maximum pressure valves 35 of Kozhevnikov with the flow control valves 88, 90 of Kroeker having flow regulators to allow for a plurality of user selectable discrete settings for providing a discrete metered fluid flow to provide for more precise control of the flow rate through the flow conduit. The use of Kroeker's flow control valves 88 and 90 for Kozhevnikov's maximum pressure valves 35 is mere substitution of one element for another known in the field that does no more than yield predictable results. *See KSR*, 127 S. Ct. at 1740 (citing *United States v. Adams*, 383 U.S. 39, 50-51 (1966)).

The Appellant further contends that the Examiner erred in rejecting claims 30, 32, 34, 35, and 37-39 because the device of Kozhevnikov includes the main 33 interconnecting the first and second working spaces of air cylinder 1, and thus Kozhevnikov does not disclose a dampening cylinder wherein the fluid flowing into and out of the first portion of the housing flows solely through the first opening and the fluid flowing into and out of the second portion of the housing flows solely through the second opening in the housing (App. Br. 18-19). The

Examiner found that Kozhevnikov's check valve 38 and valve 35 operate as the claimed first and second flow control valves (Answer 4). We agree with the Examiner.

As disclosed in Kozhevnikov, the maximum pressure valves 35 operate when the main 33 is shut off, i.e., once stand 7 has been accelerated and the forces of inertia have reached a definite permanent value characteristic for the steady mill operation (FF 13). As such, while the main 33 is shut off, the maximum pressure valves 35 and check valves 38 operate to allow the fluid flowing into and out of the first portion of the housing to flow solely through the first opening and the fluid flowing into and out of the second portion of the housing to flow solely through the second opening in the housing (FF 13).

CONCLUSIONS OF LAW

We conclude the Appellant has failed to show that the Examiner erred in rejecting claims 22-30, 32, 34, 35, and 37-40 under 35 U.S.C. § 103(a) as unpatentable over Kozhevnikov and Kroeker.

DECISION

The decision of the Examiner to reject claims 22-30, 32, 34, 35, and 37-40 is affirmed. No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv) (2007).

AFFIRMED

JRG

BOYLE FREDRICKSON S.C.
840 NORTH PLANKINTON AVENUE
MILWAUKEE, WI 53203